THE ZOOLOGIST

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ON A NEW BRITISH VOLE FROM THE ORKNEY ISLANDS.

By J. G. Millais.

Returning one evening from fishing in the Loch of Stennis, Pomona, Orkneys, in the month of August, 1886, I noticed what looked like a Water-Vole running swiftly along the sheep-track in front of me. The fact that the animal seemed to be quite black at once made me pause, for the distance from the lake was considerable, and I had never observed the black form of the Water-Vole in the Orkneys. The little beast presently darted into what I found on examination to be a large series of runs and tunnels intersecting the heather, grass, and small rocks, such as we are accustomed to find in the northern colonies of the Common Field-Vole. I saw at once that it must be a black variety of some Vole, and its size, which appeared to be twice that of the common species, led me to think that all the Orcadian Field-Voles might be melanic, and might also be a distinct species of the genus.

After sitting and waiting for an hour, I saw another of these Voles—a still larger specimen—also black; but, having no traps with me, and an engagement in the south, I was unable to capture a specimen that year. In the following August, however, a friend sent me two specimens in the flesh, one of which was russet-brown, and the other brownish black all over. I then saw that this Vole differed in many respects from *M. agrestis*. Now, too, I know that it differs from the smaller British species in more marked degree than the recently discovered *E. skomerensis*, of Skomer, does from the Common Bank-Vole (*E. glareolus*) of Britain. Owing to the carelessness of a local taxidermist in Perth both these specimens were destroyed, but I had fortunately made a careful drawing of the black variety in the flesh, and I have since obtained and examined a large series of this Orcadian Vole. Mr. P. D. Malloch collected five adults for me in September, 1898, and Mr. Cursiter, of Kirkwall, has sent me specimens, living and dead, as I have required them. Most of these have been obtained from a large colony in the parish of Sandwick, Pomona, where they are especially numerous in the grass-fields.

Before passing on to a description of this new Vole, it may be as well to say a few words as to its habitat and habits. Pomona, the main island of the Orkneys, is a large wind-swept island of some twenty-six miles in length, and fourteen broad at its greatest breadth. The general aspect of the land consists, for the most part, of low rolling hills covered with rocks and heather; whilst the lower slopes and lands adjacent to the sea have been reclaimed for the purpose of agriculture, and consist chiefly of rushy fields, grass, and clover. For the greater part of the year the Orkney Vole inhabits these rough fields, and even the part-grass, part-heather uplands, where sheep feed, until in the summer and autumn, when they repair to the rich grass and clover fields which are under cultivation, doing here and there considerable damage to crops.

So far as I can learn, there has never been a plague of these Voles in Orkney, nor have they bred to anything like the same extent as the hordes that have done so much mischief in the south. In fact, the Orcadian Vole seems to be a strictly local mammal, and to a large number of the inhabitants it is not known at all.

In the neighbourhood of the Loch of Stennis it is fairly numerous, and especially so in the parish of Sandwick. I have seen the runs of these Voles quite near Kirkwall, and on the promontory of the mainland facing the island of Damsay, and in several other places. It exists, I believe, in all the islands of Orkney where grass and rough fields are to be found, except in Hoy, which is doubtless too peaty and rocky. Locally it is known as "The Cuttick" or "Puttick," and large numbers are sometimes killed in August during the cutting of the hay.

In September, 1903, Mr. Cursiter sent me five of these Voles alive, and I kept them until the 15th of the following December, when a spaniel, who was accustomed to collect small mammals and bring them to me, finding business dull, upset the cage and released or swallowed four of them. At any rate, I found only one (a male) remaining when my faithful hound had finished his work. This specimen I kept until Feb. 10th, when I killed it for the sake of its pelage. Amongst these five was one big male, which measured 5½ in. from nose to the root of the tail; tail, 1¼ in.; the largest and handsomest specimen I have seen. This loss was particularly distressful, not only on account of his remarkable size, but because he was so amiable a little beast. He never attempted to bite, and would sit up in my hand and eat a piece of carrot without fear, whilst strangers observed him. In confinement all these Voles were at first very shy and retiring, generally biting if roughly handled, but the males soon became tame, and I could then handle all three without fear of being bitten. The females were always much shyer and more pugnacious. Their high squeak could constantly be heard when others jostled them, or fresh food was put in the cage. The Voles devoured large quantities of grass when fresh and green. They also seemed to like brown bread, and an occasional nibble at a turnip; but next to grass their favourite food was carrots. The unconsumed blades of grass, though rejected as food as soon as they commenced to dry, were taken to one corner of the cage, and carefully interwoven into a large comfortable nest. In the centre of this the Voles would cuddle and sleep the greater part of the day, their usual attitude being three tucked closely together, whilst a fourth lay across the top, forming a warm fur coverlet.

On Dec. 2nd the temperature sank to 35°, and I noticed that the Voles did not touch the food placed for them. This cold snap lasted a few days, during which they neither fed nor moved; but on a rise of temperature they again appeared, and ravenously ate the food placed for them. These intervals of hybernation continued, in the case of the single male which I kept, until Feb. 10th, 1904.

The Orkney Vole, for which I propose the name of *Microtus orcadensis*, sp. nov., may be described as follows:—

General Characters.—*Size, in very large males, nearly double that of the Common Field-Vole; skull of adults about 26 mm., very strong, with large incisors; tail, 30 mm., short and well-haired; zygomata heavy. The long hair on the forehead stands up prominently in life. Ears large and well haired. The general appearance is massive; the muzzle being particularly blunt, with the strong incisors prominent. Skull of the adult male in millimetres:—Greatest length above, 26; base length, 24; palatal length, 15; zygomatic breadth, 17; brain-case, 12; length of molars, 6·5; length of nasals, 9. And the same may be said of the skulls of females. Total length from nose to root of tail, 125 mm. Hind foot, 20 mm.*

Colour.—*In full winter pelage the general colour of the upper parts is dull sandy brown. This effect is produced by upper and minor portion of the hairs being pale yellowish brown, with the long protruding hairs black. The major and hidden portion is slaty grey. The back hairs are very dense and long, measuring as much as 15 mm. Hair on cheeks and flanks having fewer black hairs, more sandy brown, inclining to russet, whilst the throat is again paler, and the whole of the under parts sandy rufous. Hair on the legs and feet pale sandy yellow. Demarcation between the upper and lower parts is only slightly defined. The ears are heavily haired on the inner ridge. This gradually ceases towards the top, whilst the inner surface of the ear itself is thinly covered with small sandy hairs. Tail well haired with yellowish hair possessing grey under parts. Both in adults and immatures a dark line is sometimes seen extending from the root to tip of the tail on the upper surface. The above describes the full winter pelage. In summer the coat of hair is not so dense, and rather more cinnamon-rufous all over. The immatures resemble the adults, except that the hair on the upper surface of the toes is often white.*

Dimensions in Millimetres.

Adults, female and male	*Head and body*	*Tail*	*Hind foot*	*Ear*
Maximum	*140*	*30*	*20*	*12*
Mean	*120*	*26*	*18*	*11*
Minimum..................	*115*	*22*	*16*	*10*

Measurements in Millimetres of Eight Specimens presented to the British Museum.

Sex	Head and Body	Tail	Hind foot	Ear	Length of Skull	Breadth of Skull at Zygomata
1. *Male*	140	25	20	12	broken	17
2. *Female*	135	25	16	12	broken	15
3. *Male*	130	30	17	11	broken	—
4. *Female*	130	26	16	11	broken	18
5. *Male* (*type*)[*]	120	25	20	11	27	17
6. *Male*	110	24	16	11	26	17
7. *Immature male 3½ months* ...	105	23	17	10	25	17
8. *Immature female, 3½ mth.*	90	20	18	9	26	15

On comparing the Orkney Vole with the common British species of Field-Vole, the most superficial observer will at once be struck by the superior size, the broad, blunt, and heavily furred head, and the difference in colour of the northern species. The incisor teeth also present a great difference in point of size; the molars, too, are of different pattern. A comparison, too, of the average measurements at once disposes of any close association. The following are the measurements in millimetres of a typical adult male British Field-Vole, taken in Sussex, December, 1903 :—

Sex	Head and Body	Tail	Hind foot	Ear	Length of Skull	Breadth of Skull at Zygomata
Male......	100 mm.	24	16	10	25	16

The sexes differ little in size.

It will be noticed therefore that while the average adult male Orcadian Vole is much larger than the Field-Vole of the mainland, there is still greater disproportion between maximum measurements. The only part of the animal which does not show this difference is the tail.

Without offering any opinion as to how this large Arctic Vole came to exist in this small group of islands whilst the species is totally absent from the Shetlands, and very different from that found in Scotland, only about twenty miles away, one must yet notice two curious zoological points. First, we are at once struck by the fact, instanced both in this case and that of the recently described Skomer (Bank) Vole, that here we have two boreal mammals, living in a small isolated island or islands situated close to a large island (Great Britain), and presenting in both cases much larger forms than the type living on the big island or continent, such as it must have been prior to the second insulation. Students of zoology are well aware that, almost without exception, types found on islands similar in all respects to those on the mainland are almost invariably *smaller*. Secondly, I would point out that the depth of the Pentland Firth is great, and its tideway one of the strongest in the world; so it is reasonable to suppose that the Orkneys were separated from Great Britain long before that country became an island, and were then possibly a promontory of Scandinavia. Why no boreal Vole is found in the Shetlands I cannot understand, but close search may yet discover it.

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[*] British Museum, No. 4. 6. 21. 1.

[At Mr. Millais's request, I have examined the specimens of *Microtus orcadensis*, and may say at once that it is a most distinct species, and one of the most interesting and unexpected discoveries ever made in British mammology. The exact relationships of *M. orcadensis* are by no means clear, and will need to be studied with a full knowledge of the continental species of the genus. From *M. agrestis* it differs not only by the characters pointed out by Mr. Millais, but by not possessing any trace of the fifth triangle to the second upper molar so characteristic of that species, while its skull is also peculiar both in shape and size. Yet it does not seem related either to the *M. ratticeps* or *M. arvalis* group. This animal thus presents a most interesting problem, both zoological and geographical.—OLDFIELD THOMAS.]

ICHTHYOLOGY IN JAPAN.

By Prof. McIntosh, M.D., LL.D., F.R.S., &c.

The changes which have taken place in the civilization of Japan within the last forty years have been emphasized in a remarkable degree in her scientific progress. The "silent and sentimental" people of Ehrenberg, who with quiet humour could first remove the sponge from the upper end of the Glass-rope Sponge, insert the denuded tip into a hole bored by *Pholas* in a rock, and sell the whole to the authorities of the British Museum as a "Glass Plant"—which grew out of the aperture, as it were wisp uppermost—have since that date achieved a reputation as able and original scientific inquirers. At first they acquired their scientific knowledge by emigration to the centres of western nations, or from skilled lecturers introduced into their own country. So seriously did they apply themselves to the task, that now their own nation supplies capable investigators and teachers in most departments, even in the Universities; whilst the encouragement given to Marine Laboratories and Marine Research in general would do credit to a European nation. The quaint and more or less imaginary representations of the fishes of Japan have given way to a new order of things, in which Fisheries' Research is being carried out in the Imperial Fisheries' Bureau of Tokyo, under Prof. Kishinouye and others, and the fauna of a sea which can produce an edible Medusa is one which invites investigation. One is, indeed, struck by the thorough manner in which the scientific investigation of the various commercial products of Japanese waters—such as fishes, trepangs, mollusks, annelids, corals, edible medusæ, and sponges—is carried out. It is an index to the enterprising nature of the people. These remarks have been suggested by the perusal of the popular work subsequently mentioned, as well as by the fine series of memoirs on the Teleosts of Japan, by David S. Jordan (who personally examined the Japanese waters) and

E. C. Starks; and on the Elasmobranchs, by the former and H. W. Fowler. A maritime country which harbours two novel deep-sea Sharks, one of which, according to Dr. A. S. Woodward,* the able palæontologist of the British Museum, is closely allied to *Scaphanorhynchus* of the Cretaceous period, is a land of promise in fishes.

The richness and variety of the fish-fauna of Japan is well known, more perhaps in foreign than in Japanese literature; hence the authors of the 'Fishes of Japan'† have ventured to publish part i. of a work "not only helpful to those who are interested in the subject, but also to give a general knowledge of their [fishes] character and habits to those who capture or consume them." They have accordingly selected for this part four species of marketable fishes, viz. *Lateolabrax* (*Percolabrax*) *japonicus*, C. & V., a kind of Sea-Perch; *Latilus sinensis*, Lacép., a kind of Weaver; *Gymnosarda affinis*, Cantor, a Bonito; and *Seriola qainqueradiata*, Tem. & Schl., a "Yellow-tail." Each of these is finely figured in colours from life by Kumataro Ito, formerly an artist in the Imperial Fisheries' Bureau, and it is only justice to say that they are exquisite representations, and do as much credit to the artist as to the lithographer.‡

Each species is scientifically described, its economic importance indicated, its local names, habits, spawning, and growth explained, and, lastly, the methods of capture in vogue detailed. Even remarks about the presence of ripe eggs in such as the Bonito (*Gymnosarda affinis*) are made—for example, that in June and July the ovaries are full of eggs, the size of which is about 0·7 mm. in diameter, and devoid of an oil-globule. The Bonito is extensively used either in the fresh or prepared condition. "It is dressed, boned, and cut into four long pieces or strips; then it is boiled and dried hard. . . . The viscera of the fish are cleaned, chopped, and made into a fish-sauce called *shivo-kara*

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* I have to thank Dr. Woodward for his great courtesy when examining the Fish-Destroyers of former ages some years ago.

† *Fishes of Japan.* An Account principally of Economic Species. By Keinosuku Otaki, A.B. Tsunenobu Fujita, *Rigakushi*, *Nogakushi*, and Tadashi Higurashi. No. I. vol. i. Illustrated with five coloured plates, and with text-drawings of fishing gear and weirs. Shōkwabō, publishers, Nihonbashi, Tokyo, Japan. June, 1903.

‡ E. Koshiba, Tokyo.

(*shivo*=salt, *kara*=strong). The dried Bonito or *Katsu-bushi* is highly esteemed," and often given in presents on memorable occasions. Its excellence is shown by the similarity of the name to that of the highly esteemed soldier-class of Japan.

Besides the account of the food-fishes, there are four plates of fishing apparatus, with accompanying descriptions in Japanese. The first shows the structure of a seine-net—the floats being ingeniously fixed between a double cord—and the method of setting it. The second gives a graphic illustration of rod- (bamboo) fishing from a boat, and of an angular hook (without barb), as well as of artificial bait, the hook being in the midst of a tuft of filaments. The third represents a hand-line with neatly spliced sinker, and a hook of the ordinary kind; whilst the fourth gives a drawing of a line with sinker and barbed angular hook.

The work, of which this is the first part, does equal credit to the skill of the Japanese artists, and to the descriptive powers of the authors, and, with its English as well as Japanese text, cannot fail to interest Europeans, and to be of much service to the fishing industry in Japan. Slips, which might have been avoided by more careful supervision, occur in the English part, but fortunately no ambiguity is caused thereby. It might also have been well to allude to the history and uses of allied food-fishes in other countries. On the whole, the authors may be congratulated on their efforts to render their treatise both popular and reliable.

Gatty Marine Laboratory, St. Andrews University.

ORNITHOLOGICAL NOTES.

By E. F. M. Elms.

Observations and Notes on Birds in the Neighbourhood of New Romney and Littlestone-on-Sea, May 16th–20th, 1902.

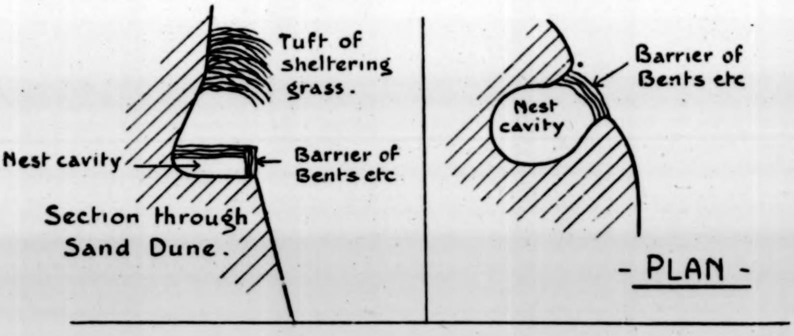
In the following notes the various species are not grouped together in any systematic manner, but simply in the order that the birds were observed.

May 17th.

Anthus pratensis.—In the first tump of coarse grass that I came to on Great Stone Point, found a nest containing four newly-hatched Meadow-Pipits.

Totanus calidris.—Saw several Redshanks.

Linota cannabina. — Found a curious Linnet's nest (Grey Linnets they are called locally) in the side of a sand-bank, and ill-concealed. The four eggs rested simply in the sandy cavity, and to prevent them from falling out a frail barrier of bents and dead grass was constructed across the outer edge of the cup (*vide* diagrams).



Sterna minuta.—Saw a few Lesser Terns, which were evidently not yet nesting.

Ægialitis cantiana.—Whilst watching the Common Terns, many of which were wheeling about over the shingle, a boy accosted me, and offered a clutch of four Kentish Plover's eggs for ten shillings. This I declined, since, if it comes to buying eggs, one can purchase those of the present species for about fivepence each at any naturalist's, though I suppose at that price they would not be "British." This fellow informed me that if I would not have them at ten shillings, he would send them to a man who would always give him twenty shillings for a clutch of Kentish Plover's eggs. This clutch was a great temptation to me, since I had not then, and have not now, any specimens in my collection; but I am happy to think, though I question whether I did any good in so doing, that I resisted the temptation of taking those eggs. It brought home very forcibly to me the appalling traffic in British-found eggs. These fellows keep a sharp eye on all eggs that have a value, and ruthlessly plunder every nest to satisfy the demands of the "collector." The fisherfolk are poor, and it is not their fault that they should seek a means of turning over a few shillings when possible; it is the collector who creates the demand, and an evil at the same time, and so long as a demand exists there must necessarily be those who will lay themselves open to satisfy it. Later in the day another boy brought me two eggs of the Common Tern ("Kips" they call them). As these birds are exceedingly common, I took them, though rather reluctantly. The youthful populace of this district are caddies, and when they are not filling this office they are relentless egg-hunters.

May 18th.

Ægialitis hiaticola.—Saw the first Ringed Plovers about halfway between Littlestone and Dymchurch; watched them running about the shingle for some time, and felt convinced there was a nest near at hand, but was unable to locate it. They (for it was a pair under observation) seemed full of anxiety and uneasiness, and incessantly kept up their tremulous piping. After accomplishing each little run forward over the pebbles they would pause, and seem to cast a sidelong glance at one another.

Alauda arvensis.— Sky-Larks exceedingly numerous; in fact, this species, the Meadow-Pipit, and the Wheatear were the most numerous birds in this district. Found a Sky-Lark's nest built in a hollow among a heap of stones on the roadside, containing four much incubated eggs. This species nested freely in convenient natural depressions sheltered by the grass growing at the sides of the roads. In the afternoon, whilst walking at the side of the road, almost trod on the parent bird, who flew up from my feet, disclosing four newly-hatched chicks. A repetition of the same thing occurred a few yards farther on, the nest containing three fresh eggs; and yet another with four fresh eggs. Besides these, several empty nests were discovered.

Pica rustica.—Romney Marsh is hardly suitable to the requirements of the crafty Magpie, as, comparatively speaking, it is a somewhat treeless district; but nevertheless a pair were observed, and the nest located. This was built about eight feet from the ground in the thickest part of a hedgerow running along the side of the road, and was composed of stoutish twigs and the usual formidable thorns. To those who once believed in the two species of Magpies—the one that built in a tree, and the other who placed its nest in a bush—this present case would doubtless furnish substantial evidence of a difference. The nest under consideration contained four of the usual eggs disposed symmetrically around a large stone!

Acrocephalus phragmitis.—Sedge-Warblers in large numbers among the ditch-reeds, incessantly uttering their chiding notes, but none seemed as yet to have eggs.

Emberiza schœniclus.—Reed-Buntings also very abundant. Found a nest containing five typical eggs built amongst the grasses of a ditch-bank, and within a few inches of the water-level.

Anthus pratensis.—A nest of four fresh eggs, well concealed in a dense tuft of coarse grass. My attention was drawn to it by the grasses being parted from one another, the result of the parent birds' continual ingress and egress to and from the nest itself.

Saxicola œnanthe.—A pretty conspicuous bird, and abundant throughout the district, more especially on the waste lands and the golf-links. Incubation had not apparently become general, and as a consequence very few birds flew up from their nestingholes. One nest only brought to light to-day, and contained five fresh eggs, slightly pear-shaped.

MAY 19TH.

A very objectionable day, with high winds and intermittent hailstorms.

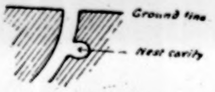
Ligurinus chloris.—Found a nest of the Greenfinch in a hedgerow with one egg only in it.

Turdus viscivorus.—Came across three Mistle-Thrushes' nests, all built in most conspicuous positions, and easy of access. They were all empty, and, as there were no fragments of egg-shells in any of them, it appeared that they must have been pilfered of their contents. One nest in particular had an extraordinary amount of sheep's wool in its composition—in fact, the builder evidently was completely nonplussed as how to properly use so large a piece, with the consequence that half of it was blowing about like a small flag—a very advertisement of the nest's whereabouts. In the evening observed several Ringed Plovers at Littlestone, and, a little later, approached quite closely two Redshanks, who were wading about in a shallow stream near the beach. When within about thirty yards of them they suddenly dashed up, uttering their sharp whistling notes, and flew away inland. A few Herring-Gulls straggling in from the sea, and flying in the direction of Dungeness.

MAY 20TH.

Saxicola œnanthe.—Flushed a Wheatear from small hole (certainly not a Rabbit-burrow) in some open and rather broken ground near the golf-links. Some withered stalks were scattered at the entrance to the hole, some just inside, but the nest itself was entirely invisible from the outside, and, if the soil had not been loose and giving, I doubt whether I should have tracked the nest at all. The nesting-cavity, containing a fairly compact structure—certainly more compact and bulky than was necessary in such a protected situation—was composed of dead grass, and lined with a little hair and wool. From the ground-line to the nest-cavity the distance was a good elbow's length, and the cavity itself was a *cul de sac*, branching out of the main hole (see diagram).

This clutch was one of six eggs, and they were of a much sturdier build than those I had the day before yesterday. Wheatears are called "Wagtails" by the local boys.



Ægialitis hiaticola.—Spent a considerable time watching a pair of Ring-Plovers at exactly the same spot where I saw them on the 18th; they were probably the same pair. Their incessant cry or whistle was a plaintive "pip-pip" or "wip-wip," I could not determine which. This I took to be the note of anxiety, and was repeated quite incessantly. Only two or three times during the half-hour I watched them did the note change, and then it was "purliu" or "wurliu." At each utterance the black crescent-like gorget heaved up and down, and my friend thought the piping note was produced without any opening of the mandibles, but I could not ascertain this myself. So quickly did their little feet move over the pebbles, that every now and then a faint clatter was audible as a stone was overturned. From this habit of theirs they gain the local cognomen of "Stone-runner." Only two or three times did either bird pick anything up in its beak; they were evidently not intent on feeding. Their attitude all along was that of anxiety. Every now and then one would stop and perch itself on the top of one of the larger stones, and proceed to scratch its beak or head with its foot, and as often as not almost toppling over in its endeavours to preen itself and maintain its balance on one foot at the same time. Now one bird begins to move—in a series of short sharp runs from one end of a pebbly ridge to the other—say, about twenty yards, and gradually it comes nearer, and it strikes me that it is zigzagging, or rather, perhaps, lessened the distance between itself and me by a series of ever-decreasing radii, with the nest as the centre. Such proves more or less to be the case, for, on rising and looking carefully over these thousands and thousands of pebbles, I almost tread on the motionless squatting form of a Ring-Plover chick. It seems a weakling, and likely to die, but doubtless it has only been hatched a few hours. I doubt whether the hollow in which it lay was the true nest; and where were the other three? The old birds, though exceedingly clamourous with their pipings, did not in any way feign injury or attempt to draw us away from their helpless young one, in the manner that so many species in this order are in the habit of doing. The eggs of the Ringed Ploved are most difficult to find, and one might look over acres of this shingly waste without finding a nest; but, curiously enough, though one hollow on the beach would seem as good as any other, the birds appear to have their own particular favourite spots, and if one is "in the know" it is far easier to find them. The fishermen's lads know exactly in which part of the beach to look for the nests, and are quite adepts at it. The pebbles among which the eggs repose exactly match the buffish-brown ground colouring of the eggs, and, furthermore, the pebbles in many cases bear black or very dark spottings and markings, almost exactly like those on the egg-shells; in fact, several times I stooped to pick up a pebble that was so much like an egg that I was temporarily deceived.

NOTES ON THE NESTING OF THE MOORHEN (*Gallinula chloropus*) AND THE LITTLE GREBE (*Podicipes fluviatilis*). RIVER ISIS, BABLOCKHYTHE, OXON, MAY 20TH–24TH, 1904.

WHILST staying at the above place, I found and examined some twenty-five Moorhens' nests, and I now have pleasure in recording my observations noted on the spot. As might have been expected at this time of year, the various nests ranged from incomplete structures, through others containing eggs in all stages of incubation, up to those having newly-hatched chicks. Two or three nests were built among aquatic herbage at the side of the river-bank, one on the branch of a willow flung down into shallow water, and resting on the river-bed, but the majority were constructed among tall reeds. These latter nests are especially noteworthy from the fact that in every case the reeds immediately surrounding the nest were bent down and carelessly interlaced, forming, as it were, a kind of bower over the sitting bird. I presume that the parent birds must do this, and if so the reason is not apparent to me. One might have been inclined to suppose that the birds used this device whereby they might conceal to a certain extent their conspicuous eggs, but this bower-like contrivance is far too scanty to effectually screen the eggs from the keen eyesight of marauding Magpies, Jackdaws, and the like.

Two other nests presented peculiarities on account of their sites, neither of which were unique, but nevertheless not very often met with. The first one was built in the centre of a thick May-bush, some four or five feet up, and overhanging the water. It was a large flattish structure, flimsily built of last year's hay, which was floated away in the terrible floods of June, 1903, and may now be seen caught in the hedgerows all around these Thames meadows. As I approached I observed two Moorhens slyly sneaking off through the long grass, and am quite convinced that this nest was shared by both of them. The nest contained no fewer than twelve eggs, of which five were in a different state of incubation from the remaining seven; thus five were very slightly turned, and seven were much more incubated, but nevertheless blew quite easily. The second curious nest was situated on the crown of a willow overhanging the river, and about twelve feet above it. The nest was merely a few pieces of dead rushes, on which as yet one egg only reposed.

The majority of the nests were well constructed with dead rushes, a few with green rushes, and one had a great many long twigs in its composition.

I examined seventy-nine Moorhens' eggs, and, so far as I could judge by just cursorily looking at them from the boat, there were only two distinct types. In all the disposition and colour of the markings were as usual, being somewhat sparingly spotted with ruddy, almost orange-brown, with a few underlying grey spots; but there were two different kinds of ground colourings, one type being a cold clay colour, the other a warm stone colour, with a suggestion of ruddy suffusion in it.

As regards the various complements of eggs, the nest already mentioned holding twelve was easily the largest clutch. Of the remainder, one contained nine eggs, two contained eight each, and several six each. Many held from one to five each, in which cases laying had not been finished.

I saw two or three families scuttling about among the reed-patches, but came upon only one nest where the young were just hatching. On the approach of our skiff the parent flew across to the opposite bank, and set up a most plaintive cry, almost a piping; but at last, gaining confidence, or from sheer anxiety for her offspring, she sedately paddled her way back, coming quite near to the boat. In the meantime some three or four black, downy little chicks scrambled over the rim of the nest-cup into the water, leaving behind three "chipping" eggs. The inmate of one was crying loudly, and fretting with its beak at a perforation in the shelly walls of its prison. With great care I contributed to its freedom by paring off more of the shell, when with one supreme effort the youngster wriggled forth, and squatted in the nest-cup. Although so young, the chicks in the water were possessed of considerable temerity, and came along, their already long-toed feet working vigorously, aiding themselves with their little stumps of wings. So fearless were they that they swam on the palm of my hand, and, fearing that they might be hurt by the boat, I placed them among the reeds, and pushed off, much to the relief of the parent no doubt, who now scurried about in the tangle collecting her brood.

Within three yards of this interesting family was moored the wet oozy collection of vegetable-matter that does duty as a nest for the Little Grebe or Dabchick. Altogether, I found eight Dabchicks' nests, and these, like the Moorhens', contained eggs in all stages of incubation, whilst one family was observed attended by the parents. The most usual number for a clutch seems to be three, but one nest contained four. In every case the eggs were covered with wet weeds. I was fortunate in seeing one Little Grebe carrying out this pretty deceit, which is one, I should imagine, that answers very well, so far as marauding mammals, birds, and reptiles are concerned. I saw this particular Grebe get up on its nest, deftly pulling on a coverlet of weeds as it did so, and at once dive into the tangle at the margin of the river. No doubt this covering is to hide the conspicuous eggs from the sharp eyes of egg-stealing birds, &c., and it may also serve to keep them warm, for I noticed that all the nests were very warm to the touch. Some of the nests were built of fresher materials, and consequently the eggs were only stained to a creamy colour. One, however, was composed of decaying vegetable-matter, well-coated with slimy mud, and evidently procured from the river-bed, and the eggs in it, although nearly fresh, were most hopelessly stained and muddied. As I was in need of some Little Grebe's eggs, I took three of the clutches, particulars of which I append :—

Clutch No. 1, containing three.—Very stained and ingrained with mud; all rather spindle-shaped, only slightly incubated. No. 1. Length, $1\frac{1}{2}$ in.; width, $\frac{15}{16}$ in. No. 2. Length, $1\frac{9}{16}$ in.; width, $1\frac{1}{16}$ in. No. 3. Length, $1\frac{9}{16}$ in.; width, 1 in.

Clutch No. 2, containing three.—Chalky white, somewhat stained; all rather spindle-shaped, and having a decided point at either end; quite fresh. No. 1. Length, $1\frac{1}{2}$ in.; width $\frac{15}{16}$ in. No. 2. Length, $1\frac{7}{16}$ in.; width, $\frac{15}{16}$ in. No. 3. Length, $1\frac{3}{8}$ in.; width, $\frac{15}{16}$ in.

Clutch No. 3, containing four.—Slightly stained to a brownish creamy colour; rather more truly oval than last, but nevertheless having a more or less defined point at either end; quite fresh. No. 1. Length, $1\frac{1}{2}$ in.; width, 1 in. No. 2. Length, $1\frac{7}{16}$ in.; width, 1 in. No. 3. Length, $1\frac{9}{16}$ in.; width, 1 in. No. 4. Length, $1\frac{1}{2}$ in.; width, $\frac{15}{16}$ in.

I had two Sky-Lark's eggs brought in for me, one of which was an aberrant type. In shape it is most pyriform, having a far more accentuated pear-shape than any Plover's egg. In colour and markings it is normal, except that on the point of the small end the markings are absent, the result being a dingy white area.

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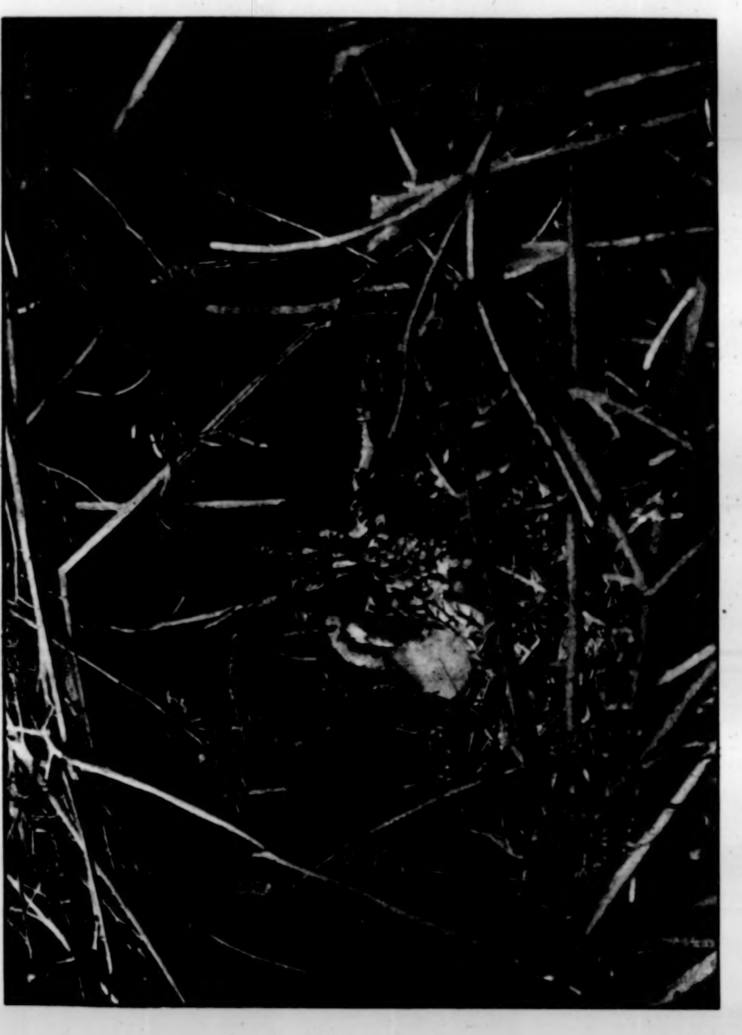

Nest of Long-eared Owl (*Asio otus*). *Cf.* p. 259.

NESTING OF THE LONG-EARED OWL (*ASIO OTUS*) ON THE GROUND.

By Robert J. Howard.

(Plate III.)

The Long-eared Owl so seldom nests on the ground that proof of its having so nested is of interest. Mr. Stevenson ('Birds of Norfolk,' pp. 46–7) says :—" Mr. Spalding, of Westleton, informs me that on one occasion he knew of a Long-eared Owl snared on her nest, which was placed amongst the heather at the foot of a fir-tree." Col. L. H. Irby states that on May 10th, 1897, Mr. Ogilvie Grant and Capt. Savile Reid found a nest on the ground on an island in Loch Syne, Sutherland ('Ann. Scottish Nat. Hist.' 1898, p. 50).

Although, in the neighbourhood of Blackburn, the Tawny Owl has, to my knowledge, been met with in small numbers for the past eleven years, and has nested in Witton Park, where it is carefully protected by the owner, Capt. Feilden, the Long-eared Owl has not occurred, I think, nearer than some woods in the Ribble valley, about ten miles distant. On the 25th March last I saw a pair of these birds perched in larches five yards apart, not far from the top of Billinge, a hill in Witton Park, whose sides are well clothed with timber—Scots pine, larch, &c.—and whose heather- and bracken-covered summit is 807 ft. above sea-level. Judging from the quantity of castings, which were composed almost entirely of the remains of Sparrows and Chaffinches, the Owls must have used these perches for several weeks. A few days after the date named only one bird was seen in the tree, so a careful look-out was kept on the Wood-Pigeons' nests, of which there are a considerable number on the hill. On April 27th the headkeeper told me that, when searching for Pheasants' eggs, he found the Owl nesting *on the ground* amongst the bracken, forty yards from her old perch. I visited the nest several times, but never put the old bird off, and did not see the young until May 14th, on which day I took a friend, an amateur photographer, who was successful in getting some good negatives of the old bird with the three young by her side. Several stems of dead bracken interfered somewhat with a good view of the birds, so, after the exposure of the first plate, we carefully removed them, the old bird remaining motionless whilst I crawled near and took with my hand a stem from within two feet of her face. Five days later we paid another visit with the camera. The old cock occupied his usual perch; the hen we soon located, by the help of some Blackbirds, a hundred yards away. One young bird was in the nest; a second had strayed about ten yards—this we returned to the nest to be photographed; the third we could not discover, but we found an addled egg close to the nest. The young birds' plaintive whistle soon brought the old ones into the trees near; the hen at first was very excited, and flapped from tree to tree with a hoarse "wack, wack"; but finally she perched in an oak a score of yards away, and watched us intently whilst we stayed, her brilliant orange eyes showing distinctly even without the aid of the field-glass.

As indicating the variety of species of birds which may be attracted, by giving them protection, together with suitable surroundings, I may state that in Witton Park—which is close to a busy manufacturing town of 130,000 inhabitants, and no part of which is more than two miles from the Town Hall—I have met with the following birds, in addition to the species common to the district:—The Hawfinch, Nightjar, Great Spotted Woodpecker, Long-eared Owl, Tawny Owl, Stock-Dove, and Common Sandpiper breed in the Park; the Blackcap, Pied Flycatcher, Crossbill, Dunlin, and Little Grebe are occasionally met with; a Common Buzzard frequented Billinge from November, 1886, until March, 1887, when it left, presumably for its breeding-quarters; the Merlin frequently gives us a call—and occasionally a good flight at Thrush or Redwing—on its way to and from the adjoining moors, where it still nests; Herons may be seen throughout the year; Kingfishers visit the reservoirs during the autumn months; in late autumn a few Grouse, driven from the neighbouring moors, drop on the heather-covered top of Billinge; and here we meet with Snipe, Jack-Snipe, and Woodcock, the good under-cover, in the shape of bracken and rhododendrons, making Billinge a noted place for the latter bird. Mallard are hand-reared in the Park, but migrants come from the Ribble estuary, following the course of this river and of the Darwen; whilst Wigeon, Teal, and Golden-eye visit us more or less frequently. Pochard and Tufted Duck occasionally come to the ponds, but I think they are birds reared in the Corporation Park which have not been pinioned; consequently these are not molested. Herring, Lesser Black-backed, and Black-headed Gulls, chiefly immature birds, are here, more or less, the year round.

NOTES AND QUERIES.

MAMMALIA.

Barbastelle in Wales.—On June 18th I received, from the Rev. D. Edmondes Owen, two Bats for identification, which I was surprised to find were the Barbastelle (*Synotus barbastellus*). They were obtained in the churchyard at Llanelwedd, which is in Radnorshire, though close to Builth. Both these are adult males, measuring from snout to end of tail 3¾ in. The fur, which is very long and silky, is dark brown (*not* black), with whitish tips, these last being much longer below than above, so that the back looks dark grey; the under parts light grey. The tail is decurved, so as to form, with its membrane, a pouch, but it is much less bony than in other *Vespertilionidæ*. I am depositing one of the specimens (which is being made into a skin by Mr. Ruskin Butterfield) in the British Museum. — H. E. FORREST (Hillside, Bayston Hill, Shrewsbury).

AVES.

Blackbird singing on a Chimney-pot in a London Road.—On May 21st, whilst walking along Marquess Road, N., I observed a Blackbird (*Turdus merula*) singing from a chimney-pot. To me this appeared an unusual proceeding, and I should be much interested to hear whether there are any similar instances on record. — T. EDWARD BELCHER (24, Clephane Road, Canonbury, N.).

[This is probably not an unusual occurrence. Some six weeks ago I observed a Thrush several times singing from a similar post of observation in the Selhurst Road, South Norwood.—ED.]

Occurrence of the Bluethroat (Cyanecula suecica) near London.—On June 17th I saw this bird at Sheen Common, not more than eight miles out of London, just off the road to Richmond. What struck me first was the beautiful band of light blue round the throat of the bird as it settled on a fence within a few yards of where I stood. I have no doubt whatever as to its identification, as the light blue throat and the otherwise dull brown colouration prevents its being confounded with any other species. The spot in the middle of the throat, whether red or white, was very indistinct, otherwise I should have noticed it at so short a distance; but most probably it belonged to the red-spotted species (*C. suecica*), as the white-spotted variety (*C. wolfi*) has only once been authentically recorded from this country, one having been picked up dead near Dungeness Lighthouse on Oct. 6th, 1902 (Zool. 1902, p. 464). According to the late Mr. Seebohm, in his 'History of British Birds,' i. p. 270, this species has been recorded from Newcastle-on-Tyne, Dorsetshire, Birmingham, Yarmouth, Margate, the Isle of Sheppy, Whimple (South Devon), Worthing, Lowestoft, Somerset, Brighton, off Aberdeen, and also a female from Spurn Point, procured by Mr. Eagle Clarke. Mr. Howard Saunders also mentions the visit to Norfolk of a flock of these birds in September, 1883, and again in the same month of the following year ('Manual of British Birds,' p. 35, 1899). In 'The Zoologist,' 1903, p. 389, a specimen is recorded from near Eastbourne, caught in September.—ERNEST C. CHUBB (Natural History Museum, S.W.).

British Examples of the White-spotted Bluethroat (Cyanecula wolfi.—As was the case last year, I have only just returned from an expedition abroad, and therefore have not seen Mr. Nelson's note (*ante*, p. 31) until recently. I again refer Mr. Nelson to Mr. Dresser's 'Manual of Palæarctic Birds,' p. 62, in which the author says, in describing the female and young of the red-spotted form:—"The female and young resemble those of that species (*C. wolfi*), there being no characters by which they are distinguishable." If Mr. Nelson examines skins of the two forms, I think he will find that the females of both have a white spot or patch in the centre of the throat. If the specimen picked up at Scarborough in 1880 is an example of *Cyanecula wolfi*, I venture to think its sex has not been ascertained correctly, as I believe I am right in saying that the females of both forms of Bluethroat never have blue throats, but only a collar of blue across the upper breast, and that only in comparatively old birds. In conclusion, may I ask if the specimen in question is still in existence, as if it is a female *C. wolfi*, with a blue throat, it would be of some interest?—MICHAEL J. NICOLL (10, Charles Road, St. Leonards-on-Sea).

Robin nesting in Tree and Hedge.—In 'The Zoologist' (*ante*, p. 190), Mr. Ellison recorded an instance of *Erithacus rubecula* nesting in a tree. I have never seen a nest among the leaves of a tree, but a year or two ago I found one in a hedge about three feet from the ground. I have also known this bird to build in a hole in the trunk of a tree at about four feet from the ground.—CHAS. H. BENTHAM (London Road, Redhill, Surrey).

Early nesting of the Lesser Whitethroat.—With reference to the note (*ante*, p. 227) on the early nesting of this species (*Sylvia curruca*) in Surrey, I may mention that on May 6th, 1902, I found a nest containing five eggs near this town, incubation having commenced. This nest therefore must have been built in April. Although the Lesser Whitethroat does not arrive here before the Common Whitethroat, it is nevertheless an earlier breeder; and in this part of Cheshire it is, some years, quite as common a bird, and apparently increasing in numbers. Only once have I found a nest with six eggs, but, as a rule, five—seldom less—seem to be the usual number. There is little doubt that, like the Common Whitethroat, it is very often double-brooded; I have seen half-fledged young in the nest as late as August 5th, and not infrequently on the wing in July. The construction of the nest resembles more closely that of the Blackcap than any of the genus, and the site also is often very similar; it is sometimes placed, however, higher up; one that I saw a few years ago was at least six feet from the ground, in a hazel-bush entwined with honeysuckle. It is a question as to which is the song proper of this bird, for the low warbling notes, distinct and varied—when one is close enough to hear them—are much more in the nature of a song than the well-known monotonous trill generally heard. I have often wondered how the curious "zip, zip" call is produced, a sound impossible to transmit to paper, and one that can hardly be associated with a bird at all, so singular is it. Besides the alarm-note, "tcheck, tcheck," it has another cry less frequently heard, a continuous harsh "tchr-r-r-r-r" of some seconds' duration, which it gives vent to when nest or young are approached too closely.—S. G. Cummings (Chester).

The Cuckoo in 1904: interesting Incident with a Young Bird.—The Cuckoo (*Cuculus canorus*) was heard in the surrounding districts from May 1st and onwards, but was only heard on my immediate ground on May 8th, and was then present in fair numbers, though perhaps not so numerous as in some other years. I found a Twite's (*Linota flavirostris*) nest on May 25th, with one young Cuckoo and two young Twites, about three days out of the shell. The former was very like the latter, but the mouth being larger. On the 27th there was no vestige of the young Twites, and on the 29th the young Cuckoo was dead, lying about eighteen inches from the nest. Two conclusions may be entertained at least on this question, one being the death of the foster-parent, and that some spasmodic action, through hunger, may have caused the young bird to spring out of the nest, near which I found a dead Twite. The other conclusion is that some, or the adult Cuckoo, had removed the young Cuckoo out of the nest. It is also possible that the Twite might have been destroyed in a disturbance over the interference with the young. No animal had interfered with the dead body up to June 5th, though it had been exposed to the scorching sun all that time. By the 6th the bones were all clean picked, and it seemed that the flesh had been left untouched until it had reached a certain stage of decay. I examined the skeleton on the 7th, and saw that it had been carefully picked. There is no proof that the dead Twite referred to above had any connection with the nest, but I am strongly of opinion that the Cuckoo may have been the eater of the flesh, and a Cuckoo seemed to be very interested during my visits; but we have no direct proof of its doing so, and it was strange that the body was left untouched so long.—W. Wilson (Alford, Aberdeen).

Long-eared Owl (Asio otus) at Esher. — On June 8th I came across the nest of this Owl in Claremont Woods. The young birds had evidently flown, as there were only castings in the nest (which, by the way, was an old Squirrel's drey). One of the old birds was there, however, sitting on a small fir-tree close by. The castings at the foot of the tree consisted of the remains of small birds. There were also a half-eaten Rabbit and Squirrel. These birds would not be desirable tenants to have in a game-preserve, as I should imagine they would play sad havoc with young Pheasants and Partridges.—Gordon Dalgliesh (29, Larkfield Road, Richmond, Surrey).

Nesting of the Ringed Plover (Ægialitis hiaticola). — In 'The Zoologist' (*ante*, p. 173), Mr. Hepburn calls attention to lined and partially concealed nests of the Ringed Plover, suggesting a gradual alteration in the nesting habits of this bird. I have had ample opportunities of observing the nesting of this species for several years, and have come to the conclusion that it is in a transitional state in regard to nest-building (see notes, Zool. 1902, p. 28; 1903, p. 193). Alas! several houses have lately been built near their old breeding-grounds, where formerly they nested abundantly, and now I seek their nests on a distant gravel sea-bank, where the Ringed Plover still nests freely. Here, last year, I found a nest with two eggs in a little depression scooped in sand, and hidden among coarse grass. Frequently the eggs are laid in fields of sprouting wheat, peas, &c., and become hidden before hatching by the growth of the crop. I wish again to call attention to the fact that exceptionally the Ringed Plover incubates her eggs when they are not placed in the normal position, *viz.* pointed ends turned inward. A short time ago I found a nest with four eggs, two placed normally, one pointed sideway, the fourth pointed to the edge of the nest. I photographed this nest, retired some distance, and lay concealed. Very soon, with my glasses, I observed the parent run back to the nest, and settle down on the eggs. I let her sit for an hour, and again examined the nest, and found the eggs still in the same position described above, and again in the same position after another lapse of an hour or two. A new colony of Little Terns (*Sterna minuta*) established itself last season on this nesting-ground of the Ringed Plover, and successfully reared a few young. This year they have returned. I found some of their nests, with eggs, on June 23rd, and watched a series of encounters between a Ringed Plover and Lesser Tern; the latter kept again and again alighting, after a short flight, close to the nest of the former. The Tern was successful in driving the Plover away in every instance, with one exception, when the Plover made a furious run, with neck drawn in, upon its graceful opponent, which, taken by surprise, flew off screaming.—J. E. H. Kelso (Southsea).

Buffon's Skua (Stercorarius parasiticus) at Aberdeen.—A pair (male and female) were shot near New Pitstigo on May 23rd, by Mr. Campbell, who sent them to me for identification. This is the fourth time I have seen the species within this district during the past forty-two years.—Geo. Sim (52, Castle Street, Aberdeen).

Erroneous Record of the Eared Grebe (Podicipes nigricollis) breeding in Middlesex.—In Mr. Harting's 'Birds of Middlesex,' p. 244, it is stated that in the 'British Miscellany' (p. 19, t. 70) there is a representation of a male and female of the Eared Grebe, accompanied by the nest and eggs, which were taken in pond on Chelsea Common in June, 1805. As this statement is referred to (in an editorial note) in 'The Zoologist,' 1892, p. 426, and again more recently in the second edition of this author's 'Handbook of British Birds,' p. 269, it will be as well to point out that a mistake has been made in the identification of the birds figured by Sowerby in the 'British Miscellany.' On turning to this work (t. 70) it will at once be seen that the birds there figured are not Eared Grebes, but merely Little Grebes in summer plumage. The birds in question are called by Sowerby "the Small Black-chinned Grebe (*Colymbus hebridicus?*")." And in his description of the examples in question (after quoting Pennant's description of the Black-chinned Grebe, then supposed to be a distinct species from the Little Grebe), Sowerby says that they are rather less than the Dobchick (*sic*), being only eight inches in length; the bill not quite one inch; chin black or dark brown. "The rest is pretty well expressed in the figure," in which the neck is reddish, and not black, as in the Eared Grebe.

Pennant describes the fore part of the neck of the Black-chinned Grebe as ferruginous. Sowerby's book was issued in 1804–6. In 1813 Montagu expressed an opinion that the birds figured on the plate before referred to, and other examples, were no other than unusually dark varieties of the Little Grebe ('Supplement to the Ornithological Dictionary).' The seasonal changes which Grebes undergo were not at that date properly understood, but the accurate Montagu (probably, having regard to his opportunities, the best ornithologist this country ever produced) was on the right track, and stated, in the work quoted above, that the Little Grebe and the "supposed species" called the Black-chin Grebe were connected by birds in all the intermediate stages of plumage. Neither Sowerby nor Montagu referred the Chelsea examples to any other species than the Black-chinned Grebe, now known to be the Little Grebe, to which species the birds figured on t. 70 of the 'British Miscellany' undoubtedly belong. — O. V. Aplin (Bloxham, Oxon).

Notes on Nest-Boxes.—During the past season we have had in our nest-boxes, drain-pipes, &c., Great Tits, Blue Tits, Nuthatches, Tree-Sparrows, House-Sparrows, Starlings, and one brood of Wrynecks. The increase of Tree-Sparrows during the last few years is remarkable, as during the first seven or eight years after coming here in 1887, I did not see a nest or an egg, and this year at least six boxes have been occupied by these little birds. One pair of Great Tits brought off a family in a House-Sparrow's nest of which they took possession. The Wryneck's nest was in an old box which I had forgotten, and I did not see it till the young were hatched. One must see "Mrs. Wryneck at Home," with the lid of her dwelling removed, to appreciate the accuracy of the name, the contortions of the creature's neck and body under those conditions being most interesting. I have seen a friend take down one of his boxes in which a Wryneck was sitting on her eggs, lift off the lid, exhibit the occupant, and hang her up again without her flying off. A few days ago I found five adult Great Bats in a box occupied earlier in the year by Starlings, and more than once, in examining a Tree-Sparrow's nest, I have found the large Red-tailed Bee in possession. On one occasion I killed a green Hornet in an old weather-beaten box, of which the wood had become soft and decayed. — Julian G. Tuck (Tostock Rectory, Bury St. Edmunds, Suffolk).

Migratory Notes, &c., for May and June.—Cuckoo (*Cuculus canorus*) first heard around here on May 1st, and heard to about the end of June; Corn-Crake (*Crex pratensis*) on May 15th; Swallows (*Hirundo* *rustica*) on May 16th; Warblers on May 16th, but not numerous; Larks to about the 15th—that is, in full song. Whinchat (*Pratincola rubetra*) I did not see before June 24th. It will be interesting to learn whether this bird has been less numerous in other places as well as here; they were back in numbers in 1903. Corn-Crakes seem to be earlier than usual.—W. Wilson (Alford, Aberdeen, N.B.).

PISCES.

Gadus poutassou at Aberdeen.—A male, eleven inches long, was caught by trawl one hundred and forty miles north-east by east of Aberdeen, in eighty fathoms of water, May 26th, by Mr. Herbert Howell, who kindly presented it to me. Its lower jaw is rather the longest; there are teeth of irregular size in both jaws, and four teeth on the anterior of the vomer, two on each side of the angle. These teeth are rather larger than those on the jaws, and somewhat obtuse. Couch says, "At the roof of the mouth a pair of prominent, sharp, incurved teeth." This would show that the number is not constant. Eyes large, which would indicate its being a deep-sea form. The stomach has nine high rounded ridges, that run longitudinally its whole length. Cæcal appendanges eleven.—Geo. Sim (52, Castle Street, Aberdeen).

Large Salmon (Salmo salar) in the Hampshire Avon.—As I anticipated in a former note (*ante*, p. 145), more Salmon have been seen and taken during this season than for several years past, especially in the higher portions of the river, four fine fish having been caught in the water between Ringwood and Fordingbridge. Anglers were not very successful with the "fly," but after May 1st, when the "prawn" was used, more fish were taken in the local waters, a visiting angler landing four or five fish, in an equal number of days, ranging from sixteen to thirty pounds; but on May 20th a resident fisherman took a clean run fish which turned the scale at forty-six pounds, was fifty inches long, and twenty-five inches in girth. I am ignorant of the weight of Salmon which have been taken lower down, or at the mouth of the river, but I think the above weight is the "record" for this immediate neighbourhood. As a juvenile angler, I well recollect what large numbers of young Salmon—called "Salmon-peel"—were frequently seen in the river, and, "biting" so freely, how easily they were caught; and I have known Salmon to be found occasionally in the brooks of the forest, having no doubt ascended when the river was in flood; but I have not heard of such an occurrence for many years past, perhaps on account of the continued lowness of the river, and some anglers to whom I have mentioned it even scouted the idea of this "king of fresh-water fish" being found in such a situation; but on one occasion I remember hearing some workmen relate how they found a large Salmon in one of the pools of a brook that was fast drying up, and, being at a loss to know how to capture it, they borrowed a hay-fork from the neighbouring farm, and thus secured the prize. I have often heard the assertion that Salmon from the Avon invariably fetches a higher price, if put on the market, than fish from other localities, but, if it is the case, I know not the reason why.—G. B. Corbin (Ringwood).

[Frank Buckland. in his 'Nat. Hist. Brit. Fishes,' records the capture of a Salmon in the Avon at Christchurch, which weighed 53 lb., and measured 4 ft. 4½ in. in length by 2½ ft. in girth. He adds: "Mr. Tucker, of Christchurch, tells me that there is no record of any Christchurch Salmon hitherto having been taken over 47 lb." This fish was taken on April 2nd, 1880."—Ed.]

EDITORIAL GLEANINGS.

We heartily welcome the first number of a new Quarterly—the 'Bradford Scientific Journal'—which can be obtained from the Hon. Sec. at 15, Godwin Street, Bradford. A paper entitled "A Study in Rooks," by E. Harper, is of considerable interest, and we give very full extracts from same:—

"It has been known, although by no means generally, that Rooks do not stay to roost in their rookery through the winter. Gilbert White, in his delightful 'Natural History of Selborne,' records, over a hundred years ago, that the Rooks of that district retired for the night to the beech-woods of Tisted and Ropley; and, coming nearer home, Waterton also recorded that the Rooks in the neighbourhood of Nostell Priory gathered up there to roost in such vast numbers, that he thought there could not be another roosting-place within thirty miles.

"No attempt has, however, been made, so far as I can trace, to ascertain really the area from whence they came, or the significance of the movement; and if these notes are the means of exciting a wider interest in this most fascinating phenomenon, they will have served a useful purpose.

"The Rook and Jackdaw are too well known to need any introduction in themselves, as one need not go very far from the centre of the city before seeing one or both species. On the principle that 'familiarity breeds contempt,' it is perhaps their very abundance which accounts for our incomplete and inaccurate knowledge of them; in fact, as I have frequently learnt to my cost, the information given by country people generally is in most cases absolutely unreliable, and necessitates the personal confirmation of all reports before they can be accepted.

"Of all our local species, the Rook and Jackdaw are the most gregarious. In summer they may be found nesting in colonies—the Rooks at their rookeries, and the Jackdaws in the cliffs or other suitable localities; whilst, after the nesting season, they flock together, roost together, and almost behave as one species. It will save repetition therefore if it is understood that, excepting where specially stated, the following remarks apply equally well to both species.

"Until September sets in the Rooks do not leave their rookeries to roost, and the date of leaving depends not only on the weather, but on the situation of the rookery. If the latter is well sheltered and quiet they are later in leaving than if it is in an exposed situation, but before October is well advanced they have got settled down to their winter habits. Until March comes round again the whole of our Bradford Rooks go to roost at Weston Park, near Otley, to which place they repair every winter afternoon, and come back to their own rookeries each morning, with the striking exception mentioned later. The journeys backward and forward form a most important item in the daily life of the birds. During the shortest days the journey back occupies frequently nearly all the afternoon, varying, of course, with the distance to be travelled, the start usually being made either from their own rookery or the near neighbourhood. At first sight it is a matter of surprise that two, three, and sometimes four hours should be occupied in doing a journey of about ten miles, which in straight flight could be covered by the Rook in about twenty minutes. The mystery is, however, explained when the birds are followed up in the direction in which they go, and shows very strikingly how fond the Rook is of the company of his fellows. The route taken by the bulk of the Bradford birds is over Baildon, Hawksworth, and Menston. Instead of going straight forward, a call is paid on the Baildon Rooks, and large numbers may be seen here idling about, doing very little feeding, but carrying on a vigorous conversation nearly the whole time. As the afternoon progresses another stage of the journey is made to Menston, and the same performance gone through. By this time the numbers are very considerably augmented, and as batch after batch arrives excitement and conversation increase, the birds flying about in flocks, perching in the tree-tops, or standing about in large groups in the fields, gradually working towards Burley.

"Paying a visit to a Rook-roost on a winter's afternoon, one is immediately struck with the entire absence of Rooks, and this becomes more manifest as darkness draws on, and still no birds put in an appearance. Here we come to another striking feature in connection with this matter. Instead of coming into the roosting-trees on arriving at their journey's end, they gather up perhaps a mile away in the fields, or perched on the tops of trees, many flocks having perforce to fly right over the roosting-trees to join their companions, until it is almost too dark to see. They then come over in one huge body, making very little noise until over the actual roosting-trees, and then burst into the most extraordinary noise it is possible to imagine.

"The sight is enough to delight the least enthusiastic of nature lovers. The birds in their thousands come out of the gathering darkness perfectly regularly and without any fuss, almost covering the sky, the noise caused by their wings resembling the rushing of wind through the trees. They circle round and perform all kinds of evolutions over the tree-tops, all the while the Rooks keeping up their cawing, and the Jackdaws their 'jock'-ing, until the effect upon the mind of the observer is truly bewildering. It takes them about fifteen minutes usually to settle down, which they do on to the topmost branches of the trees, but the noise is kept up more or less almost the whole night through. With the first glimmer of dawn they are away again, reaching their rookeries so early as to give people the impression they have never been away from the neighbourhood. The contrast between the morning flight home and the afternoon flight to roost is very marked, but the Rook is a great believer in the early bird catching the worm, and consequently puts off social matters until later in the day.

"In order, however, to obtain a more accurate idea of the reason for this roosting habit, I have followed up the Rooks in other districts within reasonable distance from Bradford, and, with the assistance of various friends, have been able to locate a number of other roosts, which are shown on the map. I think I am justified in stating that the following list represents the whole of the roosts within the limits marked :—

Weston Park.
Bramham Park.
Ripley Park.
Thieves' Gill, near Ripon.
Eshton Park, Gargrave.
Bretton Park.
Nostell Park.
Red House Wood, Moor Monckton.
Bishop Wood, near Selby.

"At 'Crow Nest,' Lightcliffe, is a large rookery, well sheltered and quiet, where the local birds occasionally roost in winter. This seems to be quite an exceptional case, and the fact that they are fed by the owner in hard weather will possibly be the explanation of this. At other times, so far as I have been able to ascertain, they roost at Bretton, the Rooks in the Halifax district going to the same place.

The characters of these places may perhaps be more clearly stated in tabular form :—

LOCAL ROOK ROOSTS.

Roost	Character of Plantation.	Shelter afforded	Approx. No. of Birds Roosting there	Proportion of Jackdaws to Rooks	Remarks
Weston Park	Mostly beech and elm, with plantation of spruce, probably 70 or 80 years' growth	On slope of hill in bottom of valley, facing S. Sheltered from N. and E. Good cover provided by spruce, but ordinarily birds roost in both spruce and beech	About 20,000	About one-third	Large rookery
Bramham Park	Beech, elm, &c., probably 100 years old, with undergrowth of yew	Ground level, but birds roost S.W. corner of wood, and consequently are well sheltered from N. and E.	Probably over 20,000	About one-third	Large rookery
Ripley Park	Thick plantation of spruce and larch, probably over 50 years' growth	Plantation not sheltered, but birds all roost in centre trees, and consequently obtain plenty of shelter from surrounding trees	About 20,000	About one-third	Nearest rookery about half-mile away, but unsuitable for roosting
Thieves' Gill, nr. Ripon	Thick plantation of larch, rather less than 70 years' growth	Plantation on west side of narrow dry valley. Birds roost in centre trees	About 20,000	About one-third	Nearest rookery about half-mile away
Eshton Park, Gargrave	Beech, ash, &c., intermingled with spruce and larch, very old growth	On slope of hill in bottom of valley, facing W. Sheltered from N. and E.	About 20,000	Nearly half	Large rookery
Bretton Park	Beech, ash, &c., probably 70 or 80 years' growth	On slope of hill facing N. In bottom of valley, and therefore sheltered by opposite side	About 20,000	About one-third	Large rookery at other end of plantation
Nostell Park	Oak wood, with a few chestnuts, &c., about 70 years' growth	Ground level. Trees fairly closely planted, but otherwise no particular claim to shelter	About 20,000	About one-quarter	Several rookeries within short distance, but unsuitable for roosting
Bishop Wood, Selby	Beech, elm, &c., of good age	Ground level, but birds always roost at S. end of wood	About 20,000	About one-third	Nearest rookery some little distance away
Red House Wood	Spruce, larch, oak, &c., thickly planted, old growth	Ground level. Spruce mostly used for roosting, and thus good cover is obtained	About 20,000	About one-third	Large rookery at other end of plantation

"It will be noticed that all these roosts are admirably chosen for shelter from the winter storms, and that they are in parts of the country which are very quiet and secluded, and that the number of birds at each one is approximately the same, although it will be understood that in the nature of things the numbers given can be little more than a rough guess. Many of them also form large rookeries, but whether or how one follows as the result of the other it is difficult to say. Mr. W. Eagle Clarke, of Edinburgh, informs me that practically all the roosts in that district are also large rookeries. With the exception of Bretton, these places have been resorted to for so long as to make it difficult to say when they were first used for roosting purposes. In the case of Bretton, until this winter they roosted in a wood about a mile away from the present one, but have had to give up this on account of it being thinned during the past year. I am also informed that the Thieves' Gill plantation will be cut down during the present year, and it will be interesting to note where these birds next take up their abode.

"I now come to what may perhaps be considered the most curious and interesting phenomenon in connection with the roosting habit. With the exception of Weston, all the other roosts mentioned are used regularly by the Rooks in their own districts from September to March, and once they have all settled down the numbers do not vary until nesting-time comes round again. In my first attempts to track the Bradford Rooks, which covered the period from September to January I was considerably puzzled by the different directions in which they seemed to go, and although during one part of the time they were tracked definitely to the east, later they were equally definitely to the north and north-east, until they were eventually found at Weston. At this place, we were informed by the keeper that for thirty years they had all left here regularly during November and part of December, but that for a year or two previously they had not all gone for this period, and gave as his reason for this that it had been customary to celebrate the 5th of November by a good display of fireworks at the Hall, which had latterly, however, been discontinued, and that this had frightened the birds away for about six weeks every winter. At the time I put this down as simply one amongst many of the stories told about them which usually proved to be incorrect. Since then, however, I have watched them closely during this period of the year, and the result has been to fully confirm, in my opinion, the keeper's explanation. Until about the beginning of November the birds, as usual, go to Weston to roost. About that time they rapidly fall off, and on the 15th November last year only about seven hundred roosted there—in other words, apparently only those which nested there. At the same time a change in the direction of the Bradford Rooks indicated that all these, without exception, had gone to roost at Bramham. Curious to know what the Bramham roost was like, if all the birds which roost at Weston had gone to the former place, in addition to those which normally roost there, I and two or three friends paid a visit there on the 21st November and witnessed a sight which was really extraordinary. As was surmised beforehand, we found about double the normal number there, and I think I should be quite safe in estimating them at certainly over 30,000. We were favoured with a most beautiful sunset, and the great bulk of the birds had gathered up to the west, towards Harewood. In their characteristic manner they came over to the trees to roost simultaneously in immense battalions, and when performing their final evolutions over the trees it was impossible to look round in any direction without seeing a huge black drifting snowstorm of Rooks and Jackdaws, while the noise they made is better imagined than described. Paying a visit to Weston on December 6th, about twice the number were found to be roosting there than was the case on November 15th, but apparently these were still practically all local birds, there being several large rookeries close together, and no signs were yet to be seen of any tendency of the Bradford Rooks to return there. It was about the 11th of December before the movement back to Weston really began. On this date a flock of Rooks and Jackdaws started off to Bramham as usual, and, after having gone a little way, eight Jackdaws, after much discussion, detached themselves from the flock, and went to Weston, the rest proceeding to Bramham. About twenty were observed to go to Weston on this date. After this the movement quickly gathered force, and, on paying another visit to Weston on December 20th, nearly half the total number were roosting here again, and by the end of the month they were practically all back. What has struck me most forcibly in connection with these observations is the remarkable intelligence displayed by the birds. Instinct, as usually understood, in my opinion, plays no part in the matter, but their capacity for reasoning (limited, of course) is evident even to a casual observer.

"This was well illustrated in the case of the Jackdaws just mentioned. On another occasion a flock of about a hundred were feeding in a field, when a tremendous uproar occurred amongst them, every bird appearing to be talking to each other, after which half of them left for Bramham, the remaining half staying behind. After about a quarter of an hour these without hesitation flew off to Weston. The only inference that could be drawn was that they had settled before the first batch left where they intended going, and went accordingly. The whole movement, in fact, seems to indicate very plainly that as they had been frightened so frequently in early November, they no longer consider it safe to roost there during that period, and only gradually pluck up sufficient courage to return. The fireworks have now been discontinued for a year or two, but the habit of leaving at this time has apparently got ingrained, although I think there are indications that they are breaking off the habit, as witness the Weston Rooks, which have stayed the year round since the fireworks were stopped.

"According to Colonel Dawson, the courteous owner of Weston, the habit started about thirty years ago, coincident with the fireworks, as before then they did not leave, and, if nothing occurs in the meantime, a few more years will probably see them again staying there throughout the winter. In the meantime, it offers a most interesting study in avian intelligence, and incidentally shows how the Rooks stick to their old roosting-trees, or they would otherwise have long since forsaken this place altogether.

"The whole phenomenon of winter roosting by these birds may, I think, be explained by two reasons, *i. e.* shelter and safety. Evidently they consider there is safety in numbers, and as has been already seen, there are no roosts in parts of the country where the birds are likely to be disturbed, even though there may be other places in the neighbourhood which may afford as efficient shelter."

In the 'Irish Naturalist' for this month Sir Robert Lloyd Patterson continues his notes on "The Common Mussel in Belfast Lough":—

"The quantity of Mussels (*Mytilus edulis*) exported from Belfast in the first three months (January, February, and March) of the following years was:—1889, 483 tons; 1890, 256 tons; 1891, 233 tons; 1892, 5 tons; 1893, 1 ton; 1894, 1532 tons; similar returns for subsequent years up to the present being as follow (I am indebted for them to Mr. W. A. Currie, the courteous Secretary of the Belfast Harbour Commissioners):—

	First three months	Whole year
1895	705 tons	3194 tons
1896	1076 ,,	3518 ,,
1897	240 ,,	1229 ,,
1898	2237 ,,	3974 ,,
1899	1547 ,,	2610 ,,
1900	694 ,,	1287 ,,
1901	724 ,,	1436 ,,
1902	660 ,,	1214 ,,
1903	274 ,,	566 ,,
1904	65 ,,	

"It will be observed that shortly after the almost blank years 1892 and 1893, and again after a comparatively small year, such as 1897, a considerable, in the latter case a very large, increase is shown; while, on the other hand, a considerable diminution generally followed the big years, such as 1894 and 1896, 1899 being no exception, although the quantity is so large, as in that year newly-found beds continued productive till over-fishing had its usual result. The recuperative power of the Mussel is evidently very great, a couple or three years apparently sufficing to restock almost exhausted beds. In certain circumstances raking and dredging cause a great destruction of the bivalves besides those that are taken. A few years ago, when these methods of capture were in active operation on some beds off Marino and Cultra, a severe north-westerly gale came on, with the result that an enormous quantity of Mussels, which had been forcibly detached from their natural 'moorings' on the floor of the sea, were driven ashore at Cultra Point, where, at high-water mark, they formed a ridge about sixty yards long, two yards broad at the base, and between two and three feet high.

"In October, 1898, the Inspectors of Irish Fisheries held an inquiry here, with the result that a close-time for Mussels (from May 15th to September 30th, both days included) was promulgated. This I considered very desirable, but the Mussel-fishers objected; and, after some time, the restriction was either modified or entirely removed—I forget which—the result being apparent in the diminished returns of the last couple of years. This year I saw several of the Mussel-boats lying in Conn's Water, laid up unused.

"The Mussels fetched 10s. per ton at the ship's side, and, besides those exported, some were used for bait by the Ardglass and other fishermen, and some are locally used as food; so it will be seen that the industry was one of some importance to those engaged in it, and its recurrent decline, due, in my opinion, to over-fishing, is much to be regretted."

A COMPLAINT was made recently by some American fishermen from Newport that their business was being injured by the battleship 'Illinois,' which was engaged in target practice. The fishermen asserted that the detonation from the heavy guns had the same effect upon the fish as a thunderstorm. They declared that the fish leave the surface, and remain at the bottom while the firing is in progress. These conditions prevail within the radius of from eight to ten miles of the vessel, and as a consequence the fishermen said they had been obliged to abandon their work. They said that they had decided to lay their grievances before the Secretary of the Navy.—*Sun, June 25th.*

Last year many plants produced few good seeds, and some none at all. The farmers around, also, complained of the infertility of the eggs of their ducks and fowls. The same conditions seem to have prevailed among wild birds. I found a most unusual number of nests containing addled eggs, some of them belonging even to birds which had wintered abroad, such as Swallows. This year there has been a great difference. I can speak only of wild birds, but such as have come under my own observation have all hatched their broods—of course, some, like the Flycatchers, are only now laying—and in most cases they did so remarkably early. I noticed a nest of young Thrushes almost ready to leave the nest on April 12th, and a day or two later they had flown, much before the usual time. Last year the Swallows did not arrive until May 1st, which was late, whereas this year they arrived on April 13th, which was early.—"Leaves from a Gardener's Note-Book," June 7th (*Garden Life*).

At a meeting of the Linnean Society of New South Wales, held on March 30th last, Mr. North exhibited skins, nests, and eggs of *Acanthiza ewingi*, Gould, and *Acanthornis magna*, Gould, from Tasmania. They were received by the Trustees of the Australian Museum in March, 1902, the birds being sent in the flesh. The nest of *Acanthiza ewingi* is a neat dome-shaped structure, with a rounded entrance in the side. Externally it is formed of thin strips of bark and bark-fibre, and thickly coated with bright green moss, the inside being lined with the rich brown downy covering of freshly budded fern-fronds, and a thick layer of feathers of the Yellow-bellied Parrakeet. It measures externally 4½ in. in height, 3 in. in diameter, and across the entrance 1¼ in. The eggs, three in number, are rounded-ovals in form, pure white, with distinct zones on the larger ends formed of small confluent spots, flecks and streaks of different shades of purplish red. Length (A) 0·68×0·52 in.; (B) 0·67×0·52 in.; (C) 0·69×0·5 in. Two eggs in the collection of Mr. Charles French, Jun., taken prior to 1899 by Mr. G. F. Hinsby on Mount Wellington, near Hobart, measure alike 0·67×0·49 in.

On the subject of Beri-beri disease, which is now engaging considerable attention, Sir George Birdwood writes in the 'Times' (June 25th) as follows:—

"The first medical writer to describe Beri-beri, and by that name, was Dr. J. D. Malcolmson, F.R.S., of the Madras Medical Service, in a paper published in 1835. Sir Joseph Fayrer, F.R.S., wrote on it, identifying one form of it with the *barbiers* of the earlier European travellers, in the 'Practitioner' for January, 1877. There is much about it in the 'Report on Prison Administration in Burma for 1878.' Dr. Lodewijks published a pamphlet on it in 1882, and in the 'St. James's Gazette' of August 9th, 1885, there is a notice of Dr. Wallace Tayler's discoveries in connection with the disease in Japan, where, according to Miss Bird, it is known by the name of *kakke*.

"The disease is endemic in Western India, in the Indian Archipelago, and throughout the coasts of Further India and Upper India, or China and Japan. It is practically confined to the labouring classes where they are vegetarians. Dr. Wallace Taylor traces it to a microscopic spore infecting rice, but the salient fact is that it almost exclusively attacks those who are engaged in hard labour on insufficient nourishment, and it may be defined as the scurvy of the tropics. It is marked by extreme weakness and frightful dropsical distension of the belly, limbs, and face, both symptoms developing so rapidly as to terrify alike the sufferer and those attending to him. Hence the name beri, meaning 'debility.' and the reduplication of it. 'beri-beri,' signifying 'extreme,' 'alarming,' 'fatal' debility. I had emphatic experience of the disease, and I never knew it to attack a woman; and, so far as my experience went, there was no treatment for it but feeding up the men labouring in circumstances conducive to its attacks with animal food and alcoholic stimulants.

"For further non-contentious particulars I would respectfully refer your readers to Sir Henry Yule's 'Hobson Jobson' (the 2nd edition by Mr. William Crooke was recently published by Murray), under the article 'Beri-beri,' to which I myself was a contributor; also to the 'Encyclopædia Britannica,' xxxi. 541 b., and xxvi. 222."

At the feather sale at the Commercial Sale Rooms, London, in April, there were 161 packages of Osprey feathers, being all the plumes of the various Egrets and small Eastern Herons, with a few of the Common Heron. Of Birds of Paradise, from New Guinea, there were 3255; of Impeyan Pheasants, from the Himalayas, 648; of Indian Rollers (Jays), no fewer than 3913, with also a large number of East India Pigeons' wings, and Pittas, Indian Owls, Parrots, and Jungle-Cocks. One firm offered for sale 469 Chinese Mandarin Ducks. The remainder of the birds were mostly from America, comprising 52,628 Humming-Birds, and numerous Cardinals, Tanagers, Trogans, Toucans, Parrots, &c. There were also a large quantity of wing-quills from Pelicans, Swans, Geese, Turkeys, and Eagles.

At the June sale the "Osprey" feathers numbered 165 packages. There were 1335 Birds of Paradise, 10 cases of Peacock-feathers (about 100 lb. to the case), 13 packages of quills, and 87 cases of various bird-skins, which last included many Humming-Birds, Tanagers, Impeyan and Argus Pheasants; Owls (one firm offered 3674), Bronze Ibis (skins and wings), Mandarin Ducks, &c. Japanese Teal are seldom seen at these sales, but one firm offered for sale 7200 pairs of wings.—*The Shooting Times and British Sportsman.*

It is practically certain, Mr. R. Lydekker declares in 'Knowledge & Illustrated Scientific News' for July, that from the time Salmon leave the sea until the close of the spawning operations they take, as a rule, no food of any kind. It may be taken as an established fact that the true feeding-ground of the Salmon is the ocean, and that while in fresh water these fish preserve a more or less strict and complete fast. Much the same is true of the Pacific species of Salmon, which belong to a distinct genus (*Oncorhynchus*), and afford a large proportion of our supply of tinned Salmon. After leaving tidal waters the throat of these fishes becomes contracted, and their stomachs are almost always found to be empty. "The tendency to feed," write Messrs. Townsend and Smith, "becomes less the longer they remain, and when one has seen the enormous runs of Salmon that sometimes actually crowd the streams, so that it would be impossible to wade without stepping upon them, it becomes apparent that they could not make their rapid journeys to the head-waters of the largest rivers and have time to feed, and that there could not be food enough to supply them if they required it. If such hordes should become hungry while on the spawning-grounds hundreds of miles from the sea, one could imagine the effect on the spawning operations. As a matter of fact, the Salmon, after leaving tide-water, lives on its own supply of fat and blood. Its flesh becomes less and less red, and the fish becomes thinner as it advances up stream. . . . The degree of emaciation reached, and the extent of the injuries received by the Salmon by the time it has spawned, preclude the possibility of its recovering, even if it reaches salt water alive. Death is a natural result of the conditions." In thus starving and spawning themselves to death, Pacific Salmon (of which there are several kinds) differ markedly from our own *Salmo salar*—by far the finer and nobler fish—which may return to its spawning-grounds for several years in succession.

20 SE 1904